



UNIVERSITY OF CENTRAL OKLAHOMA

# Center for Wildlife Forensics and Conservation Studies

CFACS Research Spotlight | 28 January 2018

Behavioral and Evolutionary Ecology

Troy A. Baird, Department of Biology

Dr. Troy Baird is an evolutionary behavioral ecologist and CFACS founding faculty member. For nearly three decades, the Baird laboratory at UCO has used the dynamic population of collared lizards occupying the flood-control spillways behind the Arcadia Lake Dam as a semi-natural laboratory for evolutionary studies of social behavior, sexual selection, communication, and mating system evolution.



Dr. Baird's innovative research methodology involves mark-recapture studies of free-ranging lizards, beginning when they first emerge as neonates and continuing throughout the lives of individuals. Longitudinal data collection on permanently marked individual lizards has produced detailed information on space use, social behavior, and life-history in relation to age. Such data sets are rare, and serve rich potential for testing evolutionary hypotheses. Project collared lizard continues to provide research experiences for undergraduates (nearly 60 to date), completion of six Master's thesis projects, over 40 papers published in peer-reviewed journals, and four book chapters.

Studies on collared lizards have involved collaborations with other faculty and students in the UCO Biology Department as well as researchers at Oklahoma State University, Indiana State University, and Fresno State University.



Dr. Teresa D. Baird is also an essential contributor to the behavioral and evolutionary ecology research program and students. She is most notably recognized for providing excellent photography.

Dr. Baird's research extends internationally to the study of Australian water dragons. Similar to collared lizards, eastern Australian water dragons have a polygynous social structure. A subset of large males defends territories using conspicuous visual displays and highly aggressive contests when challenged by non-territorial males. The fitness 'pay-off' for aggression is increased opportunity to court mature females.



Dr. Baird's comprehensive inquiries into the ecological principles and behavioral mechanisms underlying sexual selection, mate retention, juvenile survival, and adult longevity have major implications for the conservation, rehabilitation, and recovery of threatened, endangered, and fragile species.

Additional examples of past and on-going Baird Laboratory research projects include:

*1990 through 2006 - Behavioral ecology and life-historical studies of the Arcadia Lake collard lizard population and comparative studies of three other Oklahoma populations.*

- Use of space and social behavior of adult males & females.
- Age-specific conditional alternative reproductive tactics in males.
- Sexual selection, and the evolutionary costs and benefits of conspicuous coloration and display in intra- and intersexual communication.
- The interaction between steroid hormones and behavior.



*2007 through present – Combined behavioral and genetic parentage studies at in the Arcadia Lake population.*

- Long-term patterns and dynamics of settlement and individual space use.
- Annual variation in operational sex ratio and yearly fitness of males displaying alternative reproductive tactics.
- Behavioral and life-historical correlates of individual life-time fitness.
- The influence of climatic and energetic factors on annual variation in multiple egg clutch production by females.
- The role of chemical secretions in social communication.
- The role of caudal displays in anti-predator and foraging behavior of juveniles.





For further information, additional research details, and opportunities for future collaboration, contact: Dr. Troy A. Baird, [tbaird@uco.edu](mailto:tbaird@uco.edu).

